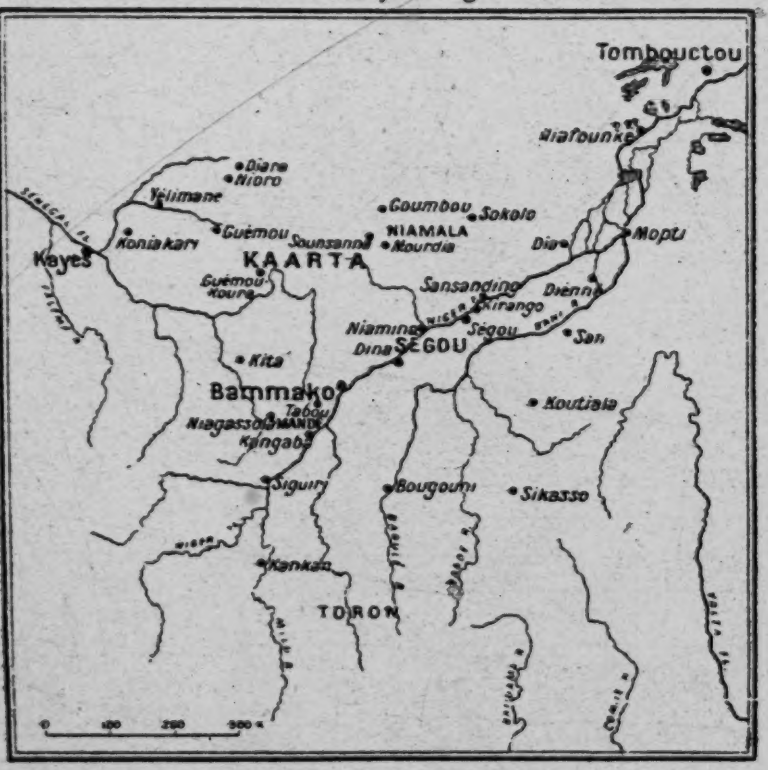
121 This work deals only with the Bambara of Ségou and Kaarta since it has already been noted that, save for their specifically local history, [4] a study of their concepts and institutions is valid in general for all of the Bambara.

103 131 It is exceedingly difficult, besides, to be entirely certain as to which of the Bambara actually belong to the Kaarta and

[133]



Ségou areas since the two designations do not correspond to any very exact geographical region. When a native speaks of Kaarta or of Ségou, he only vaguely understands the terms, and this with good reason.

101 103 131 I have noted elsewhere (1) that, etymologically speaking, the

1. In my work Les Khassonké [The Kasonke], which appeared in the series, Revue du Monde Musulman.

[19] CHAPTER 3

PHYSICAL ENVIRONMENT

I. Natural Regions

131 The Bambara live in a region stretching between the 11th and 14th degrees of latitude north and between the 7th and 11th degrees of longitude west. They are grouped around the upper Senegal and upper Niger in the zone of basins bordered on the south by the Fouta-Djallon and the Guinea Ridge. The land is divided into several natural regions.

A. The Upper Niger

133 135 Framed by the outer ranges of the Fouta-Djallon and the cliffs of the Manding plateau, witness of the Pre-Cambrian shelf, the region is essentially schistose, with small veins of quartz and chimneys of dolerite; there are large intrusions of granite to the north 50 kilometers from Bamako, to the northwest and north of Siguiri, and to the south at the approach to the massif of the Fouta-Djallon. All the region is rich in gold. Several centers have long been exploited [316] by the natives by means of a network of narrow shafts which reach down to the auriferous seam. The whole region is encrusted with a shell of iron.

133 The region of the upper Niger is an immense plain covered with mammilliform hills. The plain rises gradually from the pass of Bamako to the mountains of the south, broken only by occasional dikes, such as that of Kouroussa-Kankan. The overall relief is very simple and monotonous; the local relief is very animated and varied because of the network of valleys hemmed in by steep cliffs 10 to 12 meters high.

The Niger, fed by the Tinkisso, the Milo, the Fié and, the Sankarani, reaches Bamako with a width of about 900 meters. It flows through a plain three to four kilometers wide in a southwest-northeast direction up to Timbuktu. It undergoes an annual rise which depends solely on the amount of rainfall. From Kouroussa to 132 Bamako the first rains at the end of April, and then of May and June, begin to feed the river; the flood period begins in June. At the time

132 of high water, part of the narrow plains bordering the river are inundated.

133 At the pass of Bamako the cliffs on the left bank are close to the river and hem in the city. The pass is marked by the appearance of rapids (Sotuba, Kénié), for the river meets for the first time the [20] sandstone it cuts through. The water is highest at Bamako around September 22 and begins to subside towards October 15. It is lowest around April and May.

137 The vegetation is quite unvaried. Species of great forest trees are found in the ravines of the mountains to the south; the small Sudanese forest covers the whole Niger region up to Bamako where the layer of laterite is thin. It is a forest of deciduous trees; the trees shed their leaves, and flower in the middle of the dry season while they are still bare; then the leaves appear before the return of rainy season which marks the awakening of the herbaceous plants. Let us note particularly the karite [shea] tree (Butyrospermum Parkii) which is the most widespread and characteristic of the Sudan; the néré (Parkia biglobosa); the téli (Erythrophloeum guineense); the lingué (Afzelia africana); the caïlcedrat (Khaya senegalensis), as well as enormous gramineous plants of the Andropogon family which are more abundant in the humid depressions than on the plateaus.

[134] However, large areas covered with a layer of laterite are bare except for some scanty gramineous plants: this is the "bowal." These immense iron flats, barren of humanity, make excellent hunting

136 grounds. Buffaloes, panthers, Derby's elans, various kinds of monkeys, elephants, antelopes, lions, wart hogs, hippopotamuses, and crocodiles live there. The glossine (tsetse fly) abounds in the same region.

241 Between these immense, desolate bowals grow rice, millet, and fonio (Digitaria exilis), the most wretched of the world's cereals and the most important for ritual purposes.

133 In the valleys, outside of the beds of laterite gravel, one finds the small forest or cultivation in newly cleared places and prairies are found in the sections that are annually inundated.

B. The Ségou Basin

This is a plain framed by the sandstone of the Manding and Dogon plateaus, by the Goundam range and the range south of the Dehar near Bassi Kounou.

●133 In the south the basin is formed by mammilliform laterite hills (tertiary fluvial deposits). Upriver from Bamako, as well as for about 50 kilometers downriver, one finds sandstone which has been covered in the center by quaternary clayey deposits of fluvial origin coming from the schist, granite, sandstone, and dolerite of the upper basin. Finally, to the northwest the basin is covered with sands (sand dunes of Ouagadou [Waghadou?]) of aeolian origin.

The western part is dry and broken only by chains of wooded swamps, former branches of the river, which are scarcely enlivened by a few beds of sand or by the ferruginous ripples of Boulel. Monotonous, deserted, and sinister, it stretches up to the blond barrier dunes of the north.

The eastern part is traversed by the Niger and the Bani. It contrasts with the west; "it is flat and bare, but the river's waters give it immense stretches of flood plain of [21] intense green." To the south, these marshes form a narrow and discontinuous band; they spread out more and more toward the north, and after the confluence of the two rivers they cover the whole region up to Bara.

The inundation lasts for several months. In fact, from Koulikoro to Lake Dębo the Niger flows between two banks one to two kilometers apart, seven to eight meters high. Held back by the dam at Sotuba, the flood is felt a little later at Koulikoro. At Diafarabé, the water begins to rise in June, attaining its maximum height in the beginning of October and falling rapidly at the end of October. It is lowest in April and May. During high water (August to the beginning of January) the low plains are entirely submerged to a width of 150 kilometers.

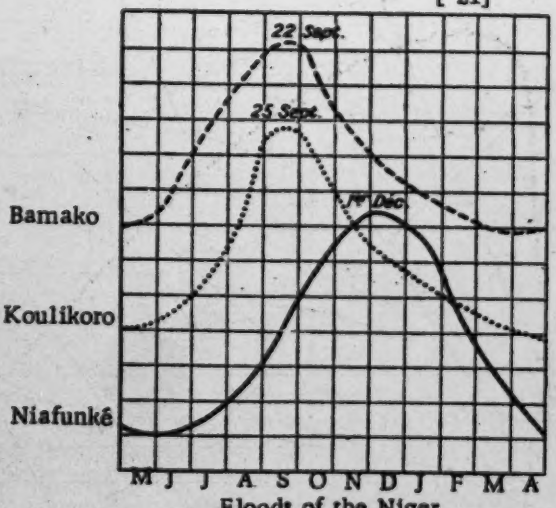
C. Issa Ber

The region formed by the central delta of the Niger is a network, beginning at Diafarabé, of small channels, lakes, swampy lowlands, and streams. The important lands begin at the large double basin of Lake Dębo and Lake Korienzé and spread out to the right and left of the river up to Timbuktu. This delta is traversed by three principal channels: the Issa Ber, the Bara Issa and the Koli-Koli. During low water the adjacent lowlands dry up in places and form chains of [chart appears here in the original text] [22] stagnant swamps which evaporation empties little by little. The level of lakes cut off

• 133

The curves show the average relation of the flood to the lowest level of the water. For each observation post the 1909 level was taken as zero for the low-water reference.

The side of each square represents one meter of water rise. Example: at the end of September at Bamako, the average flood level of the Niger is five meters.



Floods of the Niger

133 from the river goes down and uncovers land excellent for cultivation.

From Débo-Korienzé the water rises at the beginning of July, reaches its maximum level at the beginning of November and drops rapidly in mid-December to reach its lowest level in June.

D. The Manding Plateau

Lying between the valley of the Falémé to the west, the upper Niger to the south, Bamako to the east, and the Baoulé-Senegal furrow to the north, the plateau offers a fine geological unity; it is the region of Cambrian sandstone.

The plateau is surrounded by a crowded network of valleys, affluents to the Senegal, particularly the valley of the Bakoy which is fed by the Baoulé and the Bafing. The streams cut between large cliffs 100 to 200 meters high, bordering wide ravines which are wooded or periodically cultivated and which separate tabular hills bearing laterite in the south. On these heights, where a thin layer of clayey soil is spread, clings a scanty brush of baobab, acacia, and tamarind trees.

In the eastern half, at the middle Baoulé, the rock is progressively buried beneath clay and sand, then the Baoulé makes an elbow bend in a very wide valley marked by small discontinuous sandstone cliffs.

E. The Sarakollé Massif

This is a long outcropping of schist 400 kilometers long and from 150 to 200 kilometers wide. The eastern part is covered with sand, which further softens the modelling of erosion; only on the northern slope do fragments of bare schist appear. The western part presents a very different aspect; due to a covering of dolerite, it has a tabular look, and the sand disappears. It presents fine cliffs, and the valleys are veritable canyons. The schists and dolerites support a very thin vegetation whereas a very dense one flourishes in the valleys thanks to soils from decomposed dolerite and to the abundance of water.

The Bafing and the Bakoy are in fact formed by a series of basins, some of which are quite deep and separated by bars of schist

133 or sandstone. Some of these bars result in handsome waterfalls. Between Bafoulabé and Kayes, the Senegal has two important waterfalls: those of Gouina and Félou. The Senegal flows between banks 300 to 800 meters apart, forming a channel from 10 to 12 meters deep; it is subject to periodic floods depending on the rainfall.

Two kilometers downstream from Kayes the river is joined at the right by the Kolombiné, which, north of Nioro, forms the Korkodio marsh, a veritable lake in the rainy season.

Near Nioro, the Sarakollé Massif joins the valley of the southern Hodh in hilly outcroppings; to the east of Nioro, one again finds fragments of sandstone and of white marble.

137 This region is characteristic of the Sahel savanna. The karite tree disappears in favor of shrubs: doum palms (Hyphaene thebaica), and cram-cram (Cenchrus catharticus). The climate being [23] [chart appears here in the original text] drier, the brush becomes thorny, but one still finds the baobab, numerous Combretaceae, and the precious Palmyra palm.

II. Climate and Meteorology

132 This region belongs to the zones of Sudanese and Sahelian climate. Its climate may be characterized thus:

A single rainy season, in summer;

Annual precipitation from 2,000 to 250 millimeters, decreasing from south to north;

Maximum precipitation in August.

A. Temperatures

The temperatures offer:

- a maximum corresponding to the passage of the sun to its zenith (March to May) with an absolute maximum of $>40^{\circ}$;
- a secondary maximum corresponding to the end of the rainy season;
- a minimum corresponding to the maximum remoteness of the sun (December-January) with an absolute minimum of $< 15^{\circ}$;
- a secondary minimum corresponding to the maximum precipitations.

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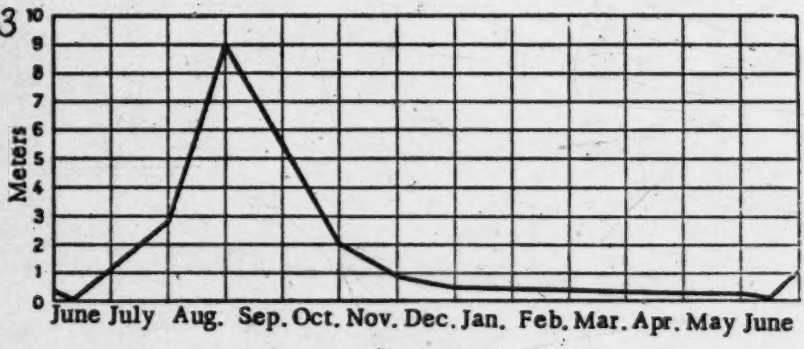

Typical Average Rise of Water at Kayes